

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, MULCH TILL

(Acre)
CODE 329B

DEFINITION

Managing the amount and distribution of residue, using a chisel, disk or other tillage equipment, to disturb the entire field surface. It applies to stubble mulching on summer fallowed land, and to tillage for planting annual or perennial crops.

This standard includes tillage methods commonly referred to as mulch tillage. These methods include the selective use of chisels, disks, field cultivators and other equipment which when properly used minimizes the burial of crop residues.

General Criteria Applicable to All Purposes Named Above

CRITERIA

Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting.

Loose residue to be retained on the field shall be uniformly distributed on the soil surface. Combines shall be equipped with spreaders capable of redistributing residue over at least 80 percent of the working width of the header.

Tillage implements shall be designed and equipped to operate through plant residues without clogging, and to maintain residue on or near the soil surface by undercutting or mixing.

Planters, drills, or air seeders shall be equipped to plant in residue distributed on the soil surface or mixed in the tillage layer.

The number, sequence, and timing of tillage and planting operations, and the selection of ground-engaging components, shall be managed to achieve the planned amount and distribution of residue after planting.

Acceptable alternative tillage sequences shall be based on locally applicable data on residue production by crops and residue

PURPOSES

This practice may be applied as part of a conservation system to support one or more of the following:

- Reduce sheet and rill erosion
- Maintain or improve soil quality
- Conserve soil moisture
- Provide food and escape cover for wildlife

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

reduction by tillage machines. Further adjustments shall be made as needed during the tillage sequence based on field measurements of remaining residue.

Additional Criteria to Reduce Sheet and Rill Erosion

The amount of surface residue needed at planting time to meet the planned soil loss objectives, shall be determined using the Revised Universal Soil Loss Equation (RUSLE).

Partial removal of residue or crop growth shall be limited to retain the amount needed to achieve the desired objective.

Additional Criteria to Maintain or Improve Soil Quality and to Conserve Soil Moisture

A minimum quantity of 50 percent residue cover shall be maintained throughout the year. Residue shall be evenly distributed and maintained on the soil surface.

The amount of residue and the number and type of tillage operations shall be limited to meet the desired objectives. The soil-conditioning index should be used as a guide.

Partial removal of residue or crop growth shall be limited to retain the amount of biomass needed to achieve the desired objectives.

Cover crops planted specifically for soil improvement may be harvested or grazed, if adequate biomass is retained or other biomass is added to achieve the desired objectives.

Additional Criteria to Provide Food and/or Cover for Wildlife

Crop residues shall be managed to provide food and/or cover for the targeted wildlife species. Use an appropriate wildlife habitat evaluation procedure as needed.

Stubble shall be maintained standing over winter. Tillage shall be delayed until spring, in order to maintain wildlife food and cover on the soil surface during winter.

CONSIDERATIONS

Mulch till may be practiced continuously throughout the crop sequence, or may be managed as part of a residue management system that includes other tillage methods such as no till.

Production of adequate amounts of crop residue necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, adjustment of plant populations, narrowing row spacings and minimizing tillage.

The number of tillage operations should be kept to a minimum, especially when soil quality improvement is a concern.

The effectiveness of stubble to trap snow and reduce plant damage from freezing increases with stubble height.

Leaving rows of unharvested crop standing at intervals across the field can enhance the value of residues for wildlife habitat.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and O&M described in this standard. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Selection of tillage equipment will be based on the following:

- Soil drainage and texture
- Soil compaction potential
- Cropping system
- Erosion potential
- Available equipment
- Desired level of surface residue

Equipment must be well maintained and properly adjusted.

Required residue levels will be documented.

REFERENCES

1. Better Crops Better Soils Conservation Technology and Information Center, 2002
2. Lamarca, Carlos Crovetto. "Stubble over the Soil" American Society of Agronomy 1996
3. National Agronomy Manual, USDA Natural Resources Conservation Service
4. Conservation Research Report No. 41, Crop Residue Management to Reduce Erosion and Improve Soil Quality – Appalachia and Northeast, USDA, Agricultural Research Service, Washington D. C., August 1995
5. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil loss Equation (RUSLE). USDA Agricultural Handbook No. 703, 1997

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.